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A Brief History of Climbing

Prior to the evolution of modern rock climbing, the most daring ambitions revolved around peak-bagging in alpine terrain. The concept of climbing a rock face, not necessarily reaching the top of the mountain, was a foreign concept that

seemed trivial by comparison. However, by the late 1800s, rock climbing began to evolve into its very own sport.

There are 3 areas credited as the birthplace of rock climbing:

1. Elbe Sandstone Mountains, Germany
2. Lake District, England
3. Dolomites, Italy

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Meanwhile, in the United States, daring summits started trickling in by the country's early climbing visionaries. Examples include: John Muir's ascent of Cathedral Peak, Tuolumne Meadows, California (1869), George Anderson's summit of Half Dome, Yosemite, California (1875), and the

first ascent of Devils Tower, Wyoming (1893).

Gear Improvements

Advance Rock Climbing

Various technical developments over the upcoming decades led to far greater possibilities. These included the modern piton (1910), steel carabiner (1910), stoppers/chockstones (late 1920s), and nylon rope (1940s).

In the 1940s, climbing started gaining wider attention with feats such as John Salathé's attempt at Lost Arrow Spire in Yosemite Valley, California. During this 1946 attempt, he placed one of the first bolts in the park.

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In the 1950s, John Gill led the development of bouldering, a style of rock climbing on boulders (usually less than 20ft (6m) tall),

where the climber uses a pad to protect falls. Meanwhile, Warren Harding led a 1958 ascent of *The Nose* (2,900ft/880m) of El Capitan, spending 45 days on the wall to reach the summit (the record now stands at 2 hours and 23 minutes, held by Hans Florine and Alex Honnold).

The Golden Era: Yosemite

The 1960s were a period of further development in Yosemite with the predominant use of aid climbing tactics, in which climbers pulled on gear to assist their ascent. This evolved into trad and clean climbing ethics in the 1970s, which compelled climbers to shift away from the use of pitons, known to cause permanent damage to the rock. These were replaced by hexcentrics (invented by Tom Frost and Yvon Chouinard) and later, the

spring-loaded camming device (simply called a *cam*, invented by Ray Jardine)—both being removable forms of protection that leave no trace on the rock.

[Piton](#)

[Hexcentric](#)

Click the underlined words to learn more about each topic.

Hint: some links won't work unless this document is downloaded to your computer or tablet. For best results, download the PDF instead of viewing online.

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Yosemite photo

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Sport Climbing Gains

Traction Sport climbing—today's most popular form of roped climbing— was a highly controversial practice during its early inception in the 1980s. Much of the backlash was due to the impact of drilling bolts into rock, a stark contrast to clean climbing. During this time, sport climbing pioneers such as Alan Watts scoured the walls of Oregon's Smith Rock State Park to find lines that could be established using bolts drilled into crack-less rock faces. The controversial practices of sport climbing spread quickly throughout the United States, seeing an explosion of growth in the 1990s. Meanwhile, challenging pursuits in the trad climbing realm continued—notably Lynn Hill's 1993

free ascent of El Capitan's *The Nose* in Yosemite ... a feat previously deemed impossible by many climbers.

Lynn Hill's free ascent of *The Nose*.

A "free ascent" means using only your hands and feet to ascend, while gear offers protection in the case of a fall. This is contrary to aid climbing where a climber may pull on pieces of gear to help him or her through challenging sections of rock. Before Lynn Hill, *The Nose* had only been aid climbed.

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In the late 1990s and throughout the 2000s, Santa Cruz native, Chris Sharma, achieved a series of prolific sport climbing ascents through a new, highly dynamic style of movement. Notably, Chris climbed America's then-hardest route at 15 years old, *Necessary Evil* (5.14c), and later established the first 5.15a-graded route, *Realization*. He was widely considered the world's greatest rock climber and played a

key role in bringing the sport to a wider population.

Rock Climbing Now and Into

the Future Today, rock climbing has begun to attract mainstream attention, thanks to ascents like Tommy Caldwell and Kevin Jorgeson's Dawn Wall project, and Alex Honnold's daring free solos.

Meanwhile, the gym climbing environment, which serves as a starting spot for most new climbers, has seen tremendous growth. While rock climbing is still seen as a fringe activity by many, climbers are consistently pushing the grades and limits of possibility, leaving ample room for significant breakthroughs in the upcoming decades.

Chris Sharma on *Joe Mama* (5.15a)

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Styles of Climbing

Rock climbing implies ascending rock faces

with specialized climbing shoes and using your bare hands against the rock. This is not to be confused with mountaineering, which often involves mountaineering boots/crampons, ice axes, and hefty gloves. There are three primary styles of rock climbing: bouldering, sport climbing, and trad climbing.

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Bouldering The simplest form of climbing, bouldering entails climbing on boulders—typically less than 20ft(6m) tall—using crash pads to protect the climber in the event of a fall. Gear is minimal, only requiring shoes, a chalk bag, and a pad. Given its small financial investment, many climbers find bouldering to be an approachable starting spot. Bouldering is typically characterized as having a few,

very difficult moves rather than the sustained endurance often required for roped climbing.

Nina Williams tackles some of Bishop, California's notoriously tall boulders.

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Sport Climbing [Sport climbing](#) relies

upon pre-drilled bolts to serve as anchor points while ascending a rock wall.

Whereas bouldering may consist of only a few very difficult moves, a comparably difficult sport climb may involve dozens of more moderate moves. To compare this to running, you may think of bouldering like a 100m dash—requiring explosive power.

Sport climbing, on the other hand, would be

more comparable to a 400m lap around a standard track—still quite powerful, but requiring excellent stamina.

Note the difference between *top rope* and *lead* climbing. Top roping is common in gyms: the rope goes from the belayer up through the anchor and then down to the climber. Falls are generally very short.

Lead climbing is when a climber is clipping the rope into protection points (bolts or trad gear) while ascending, with potential for much bigger falls.

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Trad Climbing

Short for "traditional," trad climbing requires the use of cams and nuts (frequently called

protection) placed into cracks to protect a climber in the case of a fall. Thus, instead of clipping to pre-drilled bolts, it is the climber's responsibility to properly place removable gear into the rock that he or she clips to. This is the predominant climbing style in crack climbing destinations like Joshua Tree, Yosemite, Moab, Devil's Tower, and more.

James Pearson on trad lines in South Africa.

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Single vs. Multi-Pitch Climbing

For both sport and trad climbing, routes are either one or multiple *itches*.

A single-pitch route (pictured) is one that can be completed with a single length of the rope. Most ropes are about 60m, so single-pitch routes are *often* 30m or less, allowing

for enough rope to lower back to the ground.

Multi-pitch routes necessitate that climbers climb one rope length to an anchor. From the anchor, they set up on belay again for another pitch, repeating the process until they reach the top. Some of Yosemite's walls are 30+ pitches, whereas destinations like Ten Sleep, Wyoming are renowned for their single-pitch sport climbs.

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Other Styles

Beyond the three styles outlined on previous pages, other styles of climbing involve:

- **Aid climbing:** pulling on gear to aid your ascent rather than using just your hands and feet; the opposite of this is free

climbing, which is what most of us are doing each time we climb (not to be confused with free soloing)

- **Free soloing:** rock climbing at heights beyond bouldering, but without any ropes or protection

- **Ice climbing:** climbing ice faces with ice axes and crampons

- **Alpine climbing:** rock climbing in alpine/mountainous terrain

- **Dry tooling:** using ice axes on rock, not ice

Ammon McNeely takes an aid whipper.

An Overview of Climbing Gear

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An Overview of Climbing Gear

The following is a simplified version of gear that you will likely encounter during your

early years of climbing. Recommendations are unbiased, based on personal experience and product reputation within the community. Clicking "buy" buttons will take you to further product information.

Purchases made upon clicking the links from our website support our free content.

Links will break and gear evolves, so ensure that you have the newest version of this eBook before proceeding. Get the latest edition here.

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Shoes vary in their *stiffness*. A stiffer toe box yields itself to better performance on thin edges, whereas a softer toe box is often better for friction-based footholds that don't have rigid edges. Essentially, the softer toe box better conforms

Katherine Bush

to the rock, enabling more surface area of rubber to come into contact. This technique is called *smearing*. Stiff toe boxes, on the other hand, provide excellent precision and power but don't conform to the rock quite as well.

Shoes Climbing shoes utilize sticky rubber and a tight-fitting form to enhance your sensitivity and friction on the rock. There's a spectrum that climbing shoes come in, generally ranging from greater comfort to greater performance. High-performing aggressive shoes tend to be stiffer and less comfortable, while the most comfortable shoes may yield less precision and/or power. Generally, you want your shoes to provide a very snug fit (when not wearing socks), slightly curling your toes.

high

Price

low

La Sportiva Miura

aggressive all-around

La Sportiva TC Pro

La Sportiva Testarossa

5.10 Anasazi LV / VCS La Sportiva Katana Scarpa Instinct VS

La Sportiva Tarantula 5.10 Moccasym

Performance

Butora Acro

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Chalk and Chalk Bag

Sweaty hands while climbing necessitate a drying agent: chalk. Just as gymnasts chalk up for the rings, climbers use chalk to maintain dry hands while grabbing holds. You can generally purchase loose chalk, block chalk, or a chalk sock. The end result

is the same, but a chalk sock is useful for conserving chalk and preventing spills. All chalk is stored in a chalk bag, which has a fastening closure, a means to attach to your waist, and a brush holder, as well. Some boulderers prefer a chalk bucket, which is basically an oversized chalk bag that does not attach to your waist.

Brush While chalk works well for keeping your hands dry, too much chalk on climbing holds can make them slippery when it overpowers the hold's texture. This limits the amount of friction you can obtain. When holds get too chalky, give them a gentle brush. Some climbers use specialized climbing brushes, but even a soft-bristled toothbrush can do the trick (just don't use wire bristles—they'll damage the rock!).

Crash Pad Used for bouldering, crash pads are your cushion when you fall. It's worth limiting the amount of sleeping, cooking, climbing-film-watching, and general hanging out you do on your crash pad in order to better preserve the foam. But, who are we kidding ... crash pads make stellar sleeping pads! Most crash pads are a fairly standard size of roughly 4ft x 3ft x 5in, but you can also find thin, small pads designed to fill the cracks between regular pads that are aligned beside each other under a climb. If you don't mind hauling the load, oversized pads are useful to provide a larger safe landing area—especially for highball boulders!

value big landing

Mad Rock Mad Pad

custom design

Organic Pads

Metolius Magnum

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**Photo with either crash
pads or harnesses
present**

(photo with hyperlink to gear shown)

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Harness All roped climbing and rappelling requires a harness, which includes gear loops, a belay loop, leg loops, and hard points for tying into. Lightweight harnesses often have less cushion and are

better suited for 1 or 2-pitch sport climbs, whereas heavier harnesses generally have more padding that makes them the ideal choice for all-day adventures where you may be on the wall for hours on end.

Here are our top picks for all-around, lightweight/ performance, and comfort harnesses.

s'ne
mBlack Diamond Momentum

s 'nemo
wBlack Diamond Primrose

all-around value performance comfort

Petzl Hirundos

Petzl Selena

Metolius Safe Tech Deluxe

Metolius Safe Tech Deluxe

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Rope

For most purposes, your rope of choice will be a single dynamic rope. A “single” rope

implies that it's one piece of rope (some climbers use two simultaneously, called *twin* or *double ropes*) and the term "dynamic" means the rope stretches—enabling it to absorb some of the force during a fall. Thicker ropes (generally above 10mm) provide greater durability and are an excellent choice for top rope climbing, while thinner single ropes (below 10mm) are lighter and better suited for lead climbing. Dry treatment describes a rope's ability to wick away water; while not as important for most rock climbing (as you likely won't climb in rain), it serves as a crucial feature in alpine environments because it prevents ice from forming on the rope.

Find rope recommendations in our buying guide, on right.

Belay / Rappel Device

This is used to catch your partner when he or she falls, and also used for rappelling from the top of a climb. There are two primary forms: an ATC or a GRIGRI. ATCs (short for *air traffic controller*) are simple and inexpensive. These devices have no moving parts and rely solely on your close attention to properly brake the rope when catching a fall. A GRIGRI, however, utilizes a camming design that applies high amounts of friction to the rope during a fall, assisting the belayer with braking. To put this into context, if falling rock knocks a belayer unconscious or the belayer has a sudden lapse in attention, a GRIGRI provides back-up security for the partner on

the wall.

Note that you can't put two strands of rope through a GRIGRI, so you'll typically need an ATC for rappelling.

View [belay / rappel gear recommendations](#).

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Carabiners There are far too many uses for carabiners than can be easily presented here, but at the most basic level they are used to attach things: attaching the rope to an anchor point on the wall (in the form of a quickdraw), attaching your belay device to your harness, attaching yourself directly to an anchor, etc.

Carabiners are either *locking* or *non-locking*. Locking carabiners often have a twisting component (called a screwgate) to secure itself shut. Locking carabiners are necessary for belay devices and/or setting

up a top rope due to their added component of safety. Some locking carabiners are *auto-locking*, providing an added level of safety in case you forget to screw the gate shut.

Non-locking carabiners are useful for quickdraws where you need to quickly clip the for security.

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Belay and Carabiner Recommendations

screwgate

locking non-locking

Black Diamond Positron

ATC GRIGRI

Black Diamond ATC

ATC (more versatile)

Black Diamond Magnetron

auto-locking

Petzl REVERSO 4

Black Diamond Neutrino

Petzl GRIGRI 2

Another form of belay device—more popular in Europe than the US—is the Mammut Smart and Edelrid Mega Jul. While used like an ATC, these devices provide assisted braking by cinching on the rope (similar to a GRIGRI). We endorse these devices and feel that they provide added safety over an ATC when properly used.

Mammut Smart

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Quickdraws

A quickdraw is two non-locking carabiners, connected by a piece of nylon webbing (other, more lightweight materials may be used as a substitute for nylon, such as Dyneema). The most common use of a quickdraw is to connect one carabiner to a bolt on the rock wall, while the rope is clipped through the other carabiner. This happens in lead climbing so that when the leader falls, the rope catches on the most

recently placed and clipped quickdraw, as seen in this earlier photo.

value top tier

Mad Rock Concorde 6-Pack

Black Diamond PosiWire 6-Pack

all-around

Petzl Spirit Express

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Stoppers and Cams Used for trad climbing, stoppers (also called *nuts*) are aluminum chocks placed into constricting cracks to catch a climber. They serve the same purpose as a bolt, but without damaging the rock. Cams (short for *spring-loaded camming devices*, or *SLCDs*) have multiple lobes that expand and press in opposing directions against the sides of a crack. Cams have the ability to work in parallel-sided cracks, whereas stoppers need a constriction to be most effective.

Stoppers are categorized as *passive protection* because they have no moving parts, whereas cams are categorized as *active protection*.

stoppers bigger cams

DMM Walnuts

small cams

Black Diamond X4s

Black Diamond C4s

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Webbing, Accessory Cord,

and Runners Tubular webbing is flat nylon material, sometimes used to set up anchors or a rappel. Accessory cord (about 6mm in diameter) is also used for setting up anchors or a rappel, but it is more compact than webbing when hanging on a harness. A useful length of accessory cord for most circumstances is 20-25ft (6-7.5m). Lastly,

runners (sometimes called *slings*) are used in various circumstances, with a primary purpose being for *extension* of your protection. For example, if a route is zig-zagging left and right, short quickdraws can create excessive rope drag since the rope is zig-zagging, as well. Using a runner extends the distance between the bolt/cam/nut and where the rope is clipped, therefore creating less drag.

accessory cord tubular webbing

Sterling Cord

BlueWater Climb-Spec

runners

Black Diamond Runner

Accessory cord can also be used to create *friction hitches*, such as a Prusik. This is especially useful as an added safety measure while rappelling.

Learn more about using a Prusik [here](#).

Introduction to Common Climbing

Holds

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Introduction to Common Climbing Holds

Walking into any climbing gym, one is bound to hear seemingly nonsensical jargon when climbers describe the holds on their latest project. Rest assured that you too can speak this language upon learning the terms for these holds:

Jug The most brilliant of holds, jugs are big ... so big that you can fully wrap your fingers over the hold to give it a solid grasp. You'll find many of these on beginner climbs, with far less frequency at higher grades.

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Pinch Pinches are holds that you wrap your thumb around on the opposing side of your fingers, using a pinching gesture to secure your grasp. While pinches tend to be vertical in orientation, pinching horizontal holds can be valuable at times, too. *Pinch* is

used as a noun and verb in climbing.

Sloper Slopers do not have strongly defined edges or features, so they necessitate friction to be firmly grasped. The more surface area you cover with your hand on a sloper, the more friction you will obtain.

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Crimp A hold so thin that it only allows room for the pads of your fingers (area beyond your outermost joint). Beginner climbs have few crimps, but harder grades tend to have an increasing number. As a new climber, it's important to be cautious in grabbing crimps as they can easily cause tendon injury. While a crimp is a type of hold, it is also a verb (i.e. the action of crimping a thin hold).

Jug Pinch Sloper Crimp

Other Features to be Aware Of

The four holds previously mentioned constitute the majority of hold varieties, but other terms commonly used include:

- **Arête:** not necessarily a hold, but an arête describes the corner of a rock feature or wall where one can grab
- **Chip:** common terminology for a small, thin foot hold
- **Gaston:** a hold in which the climber must face their palm outward (thumb down), then push out to the side of their body
- **Rail:** typically a horizontal hold that provides room for both hands; for example, a long, horizontal crimp
- **Side-pull:** a hold oriented in a manner that

requires you to pull perpendicular to your body (thumb up)

- Undercling:** a hold oriented in a manner requiring you to flip your hand (palm up) and pull upward to grasp; it is helpful to have high feet when pulling on an undercling

Basic Technique for
New Climbers

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Basic Technique for New

Climbers

A mindset to maintain during your early climbing days is to focus on getting better, not stronger. While strength (and strength-to-weight ratio) is an important factor in climbing, solid technique will build a foundation for your climbing that will take you far beyond what can be achieved by just getting strong. Utilizing proper technique first will make you more efficient and controlled; a better climber and in the end, a stronger climber.

As follows are 3 basic techniques to master; doing so will drastically improve your performance.

Related: get our free eBook: *Seven Mistakes to Avoid as a New Climber*.

Maintain Relaxed, Straight

Arms *With sweat dripping and bent strained arms clenching, the unnaturally strong gym-rat-turned-rock-climber falls off in exhaustion after his 5th wildly unnecessarily powerful movement of the short boulder problem.*

Climb at any gym and you'll see the above happen. While it may be humorous when you see this performance backed by a large ego, it points to a very simple mistake in technique: over-gripping and over-straining. As much as possible, you want to maintain long, relaxed arms while climbing. It feels counterintuitive because flexed arms seemingly provide a more powerful grip, but this leads to quick exhaustion and fatigue. So, any time you catch yourself with bent

arms, pause, take a breath, and relax into a straight-armed position.

Demonstration of climbing with straight arms.

Correct breathing habits will allow for greater relaxation.

Learn more in our article: [How to Breathe: Techniques for Rock Climbing](#).

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Utilize Proper Hip Technique

A general rule of thumb is this: whichever hand you're reaching with, position that hip against the wall. If you walk to a wall in the room right now (try it out!) position your right leg, right hip, and right arm against the wall. Now reach to the sky with your right arm. Note how far up the wall the tips of your fingers are.

Now, from the exact same body position, drop your right arm and try to reach the same height with your left hand. As you can see, when reaching over your body in this

manner (reaching left arm with right hip against the wall) you get far less extension. The same applies when climbing. For greater extension and more natural movement, turn the hip of the hand you're reaching with into the wall.

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Feet First, Hands Second

It's common practice for new climbers to just look up, with feet being an afterthought. However, only looking for the next handhold will often result in losing sight of the most efficient position, making the moves harder and draining your stamina faster.

Try this: before each time you move a hand, ask yourself: *Are my feet in the most ideal position to make this a fluid and natural movement?* At first you may not

know the answer, but as you learn more about your body and its movement, you will naturally be able to ensure that your positioning is correct prior to moving each hand. If you find this challenging at first, don't be turned off; above all it's an awareness exercise that will drastically aid in your proprioception.

Demonstration of proper footwork technique.

Quickly improve your footwork by reading our feature about this trick: silent feet.

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Belaying

Fundamentals

We advise to get trained in belaying from a

mentor or in a class. However, the essentials of belaying are quite simple and it's paramount that you perfect this form.

Top Rope Belaying with the PBUS Method

Our recommended top rope belaying technique for both GRIGRIs and ATCs is the PBUS method, which is a four-step process of **p**ull, **b**rake, **u**nder, **s**lide.

Pull: The pull is a simultaneous action of pulling with both your *guide* and *brake* hands in harmony. If using your right hand as the brake, the pulling motion will consist of gently pulling down with the left hand and outward with the right (seen in photo).

These motions are to be done simultaneously so that extra slack doesn't enter the system.

Brake: Towards the end of your pulling motion, the brake hand should immediately go down towards your hip into a brake position. This pull-to-brake motion should be fluid and in the shape of a slight curve.

Under: With your right/brake hand in breaking position near your hip, take your left/guide hand

and place it under the brake hand. **Slide:** With your left hand now under your right, slide your right/brake hand back up toward the belay device, *ensuring that it never leaves the rope*. After sliding, return your left hand to the climber's end of the rope, ready to repeat the process.

Petzl

Watch the PBUS method in action.